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**BEFORE THE BOARD OF PATENT APPEALS  
AND INTERFERENCES**

Application Number: 10/727,714  
Filing Date: December 05, 2003  
Appellant(s): KIM ET AL.

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Ralph T. Webb  
For Appellant

**EXAMINER'S ANSWER**

This is in response to the appeal brief filed 1/8/08 appealing from the Office action mailed 8/22/07.

**(1) Real Party in Interest**

A statement identifying by name the real party in interest is contained in the brief.

**(2) Related Appeals and Interferences**

The examiner is not aware of any related appeals, interferences, or judicial proceedings which will directly affect or be directly affected by or have a bearing on the Board's decision in the pending appeal.

**(3) Status of Claims**

The statement of the status of claims contained in the brief is correct.

**(4) Status of Amendments After Final**

The appellant's statement of the status of amendments after final rejection contained in the brief is correct.

**(5) Summary of Claimed Subject Matter**

The summary of claimed subject matter contained in the brief is correct.

**(6) Grounds of Rejection to be Reviewed on Appeal**

The appellant's statement of the grounds of rejection to be reviewed on appeal is correct.

**(7) Claims Appendix**

The copy of the appealed claims contained in the Appendix to the brief is correct.

**(8) Evidence Relied Upon**

6,492,058	WATANABE et al.	12-2002
5,976,729	MORISHITA et al.	11-1999

5,188,909

PEDICINI

2-1993

## **(9) Grounds of Rejection**

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 12, 15-17, 20, 27, 28 & 35-38 are rejected under 35 U.S.C. 103(a) as being unpatentable over US Patent 6,492,058 (Watanabe) in view of US Patent 5,976,729 (Morishita) and US Patent 5,188,909 (Pedicini).

Watanabe teaches using a positive temperature coefficient (PTC) safety device between the terminals (Figs. 10, 15; 8:43-49). The PTC protects the battery by restricting the flow of current when the temperature increases and a rapid increase in the voltage will cause the battery to heat up. A protection circuit is used in conjunction with the PTC to aid in preventing the over-charging and over-discharging (Fig. 1 & 2; 1:13-20). The protection circuit is connected to the safety device and the second terminal (8:65 – 9:5). The intermediate product, as taught by Watanabe is a lithium battery with a safety device located on the exterior of the battery with one end of the lead disposed at a terminal and the other end connected to the safety device (Figs. 1, 2, 10). The PTC element has separate leads coming from the element before assembly

with the two leads attached to their respective terminals (Figs. 1 & 10 and relevant passages).

Regarding claims 12 & 38, the claims are seen as product-by-process and even though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process (MPEP 2113). The final product claimed is a battery with two terminals having two leads and a PTC element located between the leads. One lead is an output lead made of a first material and the second lead is the first lead made of a first material and a cladding material. The number of sub-leads on the different parts used to assembly the battery is a process of making the battery and does not patentably distinguish the instant claims over the prior art.

Regarding claims 27 & 28, the claims are seen as product-by-process and even though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process (MPEP 2113). The method of forming the weld is not germane to the issue of patentability of the device itself and therefore this limitation has not been given patentable weight.

Watanabe teaches spot-welding the materials together, producing an end product that has been welded and is not patentably distinct from the instant claims.

Watanabe is silent to the materials used for the leads and the housing.

Like Watanabe, Morishita teaches a lithium ion cell with an external protective circuit for controlling the cell voltage to prevent overcharge and over-discharge (1:10-15). The lithium cell has a first surface of the outer can and a second surface being the lid (4:1-16). It is obvious to one skilled in the art to attach one electrode to a first surface of the case and the opposite electrode to a second surface to make a battery with external contacts, as shown by Pedicini (5:52-66). The outer can be made from aluminum alloy and the lead is made from a first material nickel and a second material of aluminum (5:30-38). The components are welded together using ultrasonic welding (2:37-40). Further, Morishita teaches the use of different materials in the making of the leads with alternate welding techniques. As stated above, the outer can and lead are made of the same material and attached using ultrasonic welding so a smaller heat value is required, thereby preventing the occurrence of pinholes and cracks (2:37-53). Two-layer cladding for the lead plate is also used for current utilization (5:22-27). So regarding the different first and second materials used as leads, the use of multiple materials is taught and it would have been obvious to one having ordinary skill in the art at the time the invention was made to pick lead materials based on the use in the battery and the style of welding needed. It is held to be within the general skill of a worker in the art to select a known material on the basis of its suitability for the intended use as a matter of obvious design choice (*In re Leshin*, 125 USPQ 416).

Therefore it would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to modify the lithium cell of Watanabe with the battery casing and lead material of Morishita to understand what materials should be used for the leads in the production of the lithium battery with a protective device.

Watanabe is silent to the PTC element being located on the lead material.

Watanabe teaches locating the PTC element along the side of the battery, between the output lead and the first lead. The PTC element is a safety device that increases its resistance in response to a rise in temperature. So as the temperature of Watanabe's battery rises, the resistance of PTC element also increases to protect the battery. If the PTC element is located right next to the battery then the heat from the battery is transmitted to the PTC element quickly and without any insulation effects from other components. If the PTC element is located away from the battery then the function is the same, just the time frame or the amount of heat required to activate the element is changed. Watanabe also teaches locating the PTC element away from the battery by placing it on a circuit board that is then covered with insulating paper before the element is placed next to the battery (Fig. 1; 1:29-38). In either case, the function of the PTC element is the same, to increase the resistance value in relation to the rise in temperature. It would be obvious to one skilled in the art to choose the correct PTC element for the proper placement in the battery. In other words, if the element was located adjacent to the battery then the element would have a higher heat threshold. If the element is located away from the battery body, separated by a circuit board, insulating paper or a couple of metal layers, then an element with a lower or more

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sensitive temperature threshold is used since it would take more heat or a longer time to transfer the same heat value as if the element was adjacent to the battery.

Therefore it would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to modify the PTC element located next to the body of the battery or away from the body as taught by Watanabe with a location being on a lead, such that the lead is between the battery and the PTC element, since the relocating the element, to serve the same purpose and in the same manner, is considered well within the means of one of ordinary skill in the art. Furthermore, Morishita teaches locating the PTC element on top of a lead, so that it doesn't touch the battery (Figs. 3 & 7).

Watanabe is silent to the use of a safety vent.

Pedicini teaches sealing the opening of the battery with a cap assembly that has a vent for the cell (5:52-66).

The motivation to use a cap with a vent is to provide a means for the expulsion of any internal gas pressure created by the battery. The pressure will not only cause a decline in the effectiveness of the battery but can cause the battery to rupture.

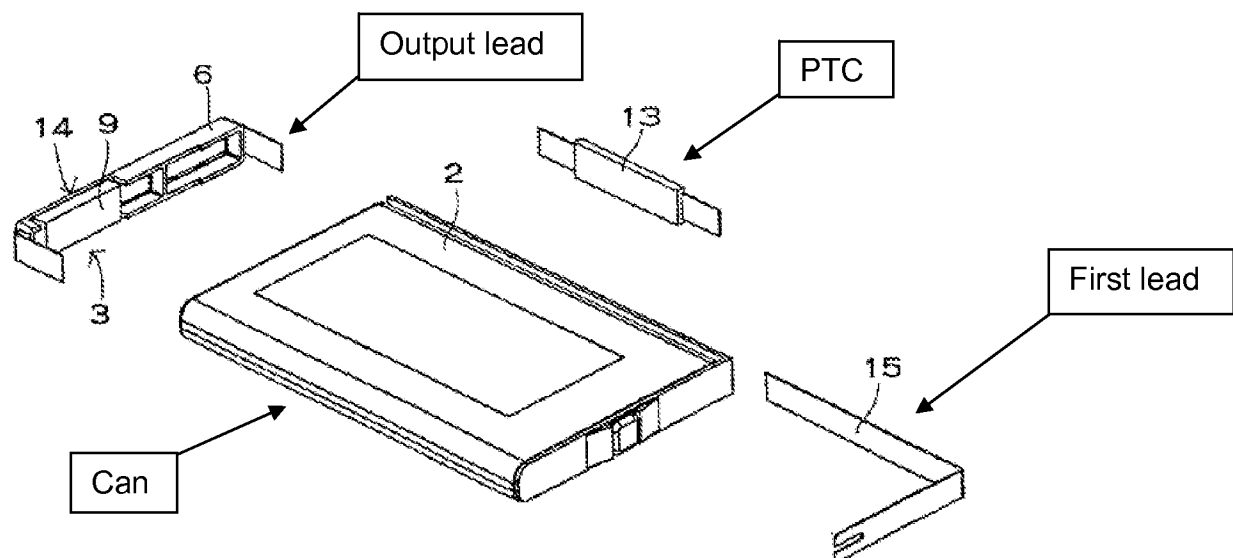
Therefore it would have been obvious to one of ordinary skill in the art at the time the claimed invention was made to modify the battery of Watanabe with the cap vent to promote a safer and more efficient battery.



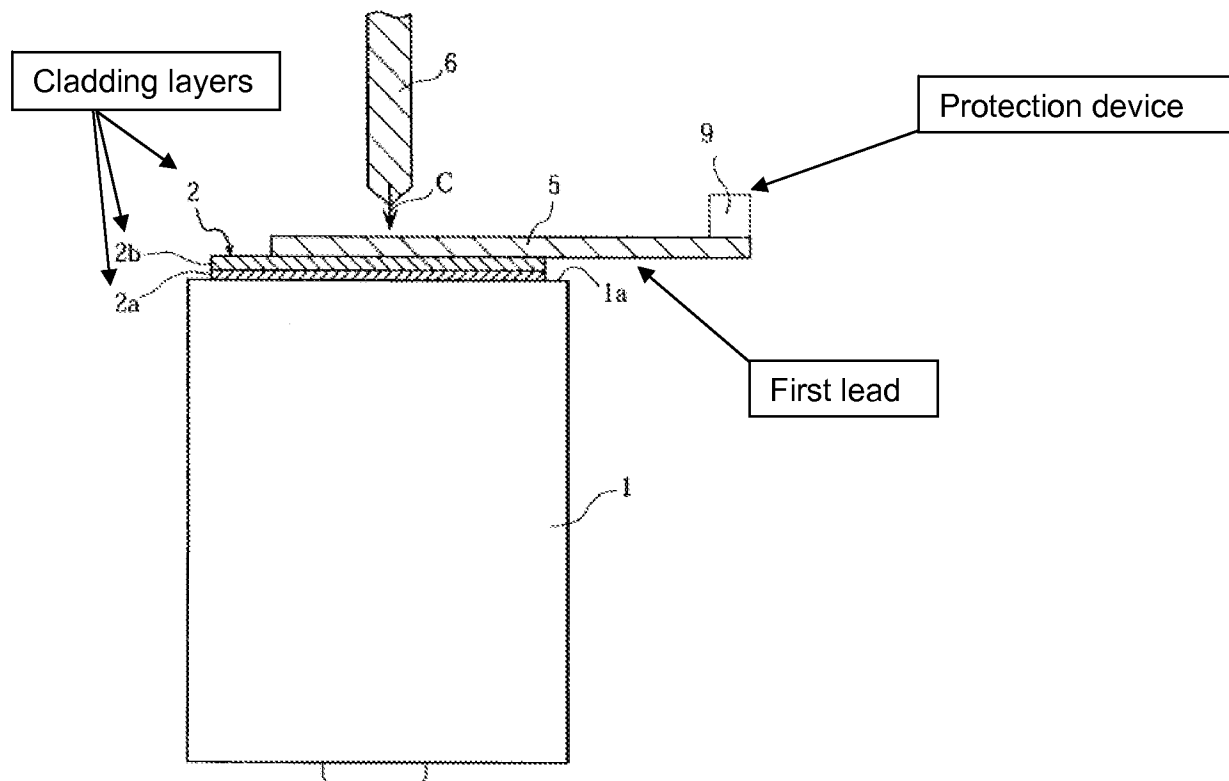
### (10) Response to Argument

Appellant argues the combination of Watanabe, Morishita and Pedicini do not obviate the claimed invention because all of the claimed elements are not taught. As cited by appellant on page 4 of the brief, "Factual findings made by the Office personnel are the necessary underpinnings to establish obviousness." (KSR International Co. v. Teleflex Inc.) The prior art presented has all the factual findings to met the limitations of the claimed product and the motivation to combine the references, thereby obviating the claimed invention.

The following figures are included from the prior art of Watanabe and Morishita to aid in the understanding of the prior art.



Watanabe Figure 10



Morishita Figure 7

Appellant alleges Morishita does not describe a lead including a layer of a first material or an alloy thereof. Further, appellant argues, "the 'lead plate' mentioned is not a lead itself but instead a plate structure that is attached to the bottom of the can of Morishita and to which a lead is attached." The 'lead plate' as taught by Morishita and

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the 'first lead' as claimed by appellant is only a reference term used to describe an electrically conductive material that electrically connects a battery terminal, in this case, to one side of a PTC device. Morishita teaches a battery with a protective circuit (Fig. 7 (9)) connected to a nickel lead (Fig. 7 (5)), which has a "two-layered cladding" (Fig. 4, 5:23-28, (2a, 2b)) portion of aluminum and a second layer of nickel (7:40-45) connected to the can. This teaching clearly meets the claimed limitation of, "a first lead, electrically coupled to the first terminal, including a layer of the first material or an alloy thereof and a cladding layer made of a second material or an alloy thereof; ... a portion of the first lead where the cladding layer of the first lead is connected to the can". The cladding of the lead is taught by Morishita to improve the reliability of the protective circuit and improve the current utilization by decreasing the cracks and pinholes in the weld area (Abstract, 1:40-55). So the final product taught by Watanabe and Morishita is a battery with an output lead connected to a first terminal and a first lead connected to a second terminal with a safety device connected between the two leads (Watanabe). Morishita teaches improving the first lead material by cladding the first lead with a second material. The improvement provides a more reliable protective circuit and a better weld. Therefore, Morishita teaches a known technique, cladding an electrical lead, to improve a similar product, a battery with a protective circuit. (KSR International Co. v. Teleflex Inc.) As such the claims are obvious over the prior art teachings of Watanabe in view of Morishita.

Regarding appellant's arguments against In re Leshin being inapposite, the case was cited for the rationales that resulted from the case, not the particulars of the case. As stated in MPEP 2144.07, the selection of a known material based on its suitability for its intended use supported a prima facie of obviousness. So, while both the cladding of the first lead and the materials for the leads, as claimed, are taught by Morishita, it would be obvious to one skilled in the art to choose lead materials based on factors such as ease of welding, cost, durability and electrical and heat conductivity as laid out in the rejection above.

Appellant argues Pedicini doesn't "mention a lead at all." The Pedicini reference is not applied for the disclosure of leads since the leads are already taught by both Watanabe and Morishita. Pedicini teaches using a vent in the cap assembly of the battery and is combined with the teachings of the other prior art to show it is known in the art to use a vent with a battery for at least safety reasons.

Finally, appellant argues Watanabe does not teach that the PTC element is separated from the can. The KSR case reaffirmed the rational that, "[t]he combination of familiar elements according to known methods is likely to be obvious when it does no more than yield predictable results." As discussed in the above rejection, Watanabe is silent to locating the PTC device away from the battery can. However, Watanabe does teach using the PTC device next to the battery can and that the resistance of the PTC device increases as the battery temperature climbs to a prescribed temperature. So as

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the battery temperature increases, the resistance of the PTC device increases and this increase in resistance causes the current flow of the battery to decrease, which in turn effectively cuts off the battery's electrical output (Watanabe 8:43-50). Therefore, one skilled in the art could regulate the temperature at which the PTC device starts to operate by the distance the PTC device is located from the battery, in a thermal relationship. For example, if the PTC device is touching the battery can then the thermal conductivity between the PTC device and the battery would be higher than if the PTC device is separated from the battery by some distance or some thermal insulation. As such, the time for the PTC device to start operating as the critical temperature is reached, will be quicker for the PTC device located next to the battery as opposed to the battery with some distance between the two components. So in either case the PTC device performs the same function in the same manner but would only do so at either different times or battery temperatures, which are predictable. This logic and knowledge is common to one of ordinary skill in the art and this combination is no more than a predictable use of prior art elements according to their established functions.

Appellant has not provided any improvement to the teachings of Watanabe and Morishita that were not obvious over or at least predictable to one of ordinary skill in the art. (KSR International Co. v. Teleflex Inc.) As such, the claimed invention is obvious over the combined teachings of Watanabe, Morishita and Pedicini, as laid out in the rejection above.

**(11) Related Proceeding(s) Appendix**

No decision rendered by a court or the Board is identified by the examiner in the Related Appeals and Interferences section of this examiner's answer.

For the above reasons, it is believed that the rejections should be sustained.

Respectfully submitted,

Keith Walker

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